IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANTS' BRIEF ON APPEAL IN ACCORDANCE WITH 37 CFR §41.37

APPLICANT:	Helmut WEINER	CONFIRMATION NO.: 3677
SERIAL NO.:	10/009,539	GROUP ART UNIT: 2625
FILING DATE:	October 29, 2001	EXAMINER: James A. Thompson
INVENTION:	METHOD, SYSTEM AND COMPUTER PROGRAM FOR COMPRESSING AND TRANSMITTING IMAGE RASTER DATA	

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SIR:

Petition

Applicant petitions the Commissioner for Patents for a one month extension of time in the period for filing the Appeal Brief in the appeal filed on October 10, 2007, in accordance with 37 C.F.R. §1.136(a), and is authorizing a charge in the amount of $120.00 fee so that the period for filing the Brief is extended from December 10, 2007, to January 10, 2008.

Brief on Appeal

This is an appeal, filed by electronic filing on October 10, 2007, of the Examiner's Final Rejection dated July 10, 2007, of claims 39-92.

In accordance with 37 C.F.R. §41.37, this Brief is submitted with an electronic payment in the amount of $510.00 to cover the filing fee.

(i). *REAL PARTY IN INTEREST*

The real party in interest in the present appeal is the assignee, OCÉ Printing Systems, GmbH, by recorded assignment as recorded on October 29, 2001, at Reel 012393 / Frame 0564.

(ii). *RELATED APPEALS AND INTERFERENCES*

No related appeals or interferences have been filed.

(iii). *STATUS OF CLAIMS*

Claims 39 - 92 are on appeal and are set forth as amended in Appendix "A" attached hereto. All other claims in this application (Claims 1 – 38) have been cancelled.

The status of the claims on appeal is as follows:

In the final Office Action, the Examiner

a) rejected claims 39 – 46, 51, 53 – 56, 58 – 61, 70, 72, 75 – 77, 79 – 83 and 85 – 88 as obvious over the patents to Clouthier in view of Spaulding and Knox;

b) rejected claims 47, 48 and 50 as obvious over the patents to Clouthier in view of Spaulding, Knox and Hiratsuka;

c) rejected claim 49 as obvious over the patents to Clouthier in view of Spaulding, Knox, Hiratsuka and Wong;

d) rejected claims 52, 57, 62, 71 and 78 as obvious over the patents to Clouthier in view of Spaulding, Knox and Venkateswar;

e) rejected claims 63, 65 and 69 as obvious over the patents to Clouthier in view of Spaulding, Knox and Endoh;

f) rejected claims 64 and 66 as obvious over the patents to Clouthier in view of Spaulding, Knox, Endoh and Brindle;

g) rejected claims 67 and 68 as obvious over the patents to Clouthier in view of Spaulding, Knox and Züfle;

h) rejected claims 73 and 74 as obvious over the patents to Clouthier in view of Spaulding, Knox, Venkateswar and Applicant's alleged admitted prior art;

i) rejected claim 84 as obvious over the patents to Clouthier in view of Spaulding, Knox and alleged well-known prior art; and

j) rejected claims 89 – 92 as obvious over the patents to Clouthier in view of Spaulding.

(iv). *STATUS OF AMENDMENTS*

No amendment has been filed subsequent to the Final Rejection.

(v). *SUMMARY OF CLAIMED SUBJECT MATTER*

Briefly, the present invention provides a method and a system for compressing and transmitting image raster data that also works with high efficiency when a page to be transmitted contains gray picture elements. This method and system provides that a data stream of image raster data is generated from language elements of a graphics language, the data stream containing gray image areas in the form of dither cells whose gray scale values are determined by model dither cells, the image raster data of each page are divided into tiles of a two-dimensional grid network, whereby each tile comprises a plurality of image raster data, the corresponding model dither cell and the gray scale value thereof being identified for each tile that contains only dither cells, and this tile being marked, and characteristic data of the marked tiles are transmitted for further processing of the image raster data, whereby these characteristic data contain information about the position of the respective tile and the respective gray scale value. In the preferred embodiment, the raster data for the marked tiles is not transmitted so that only the characteristic data for these tiles need be transmitted.

The claims on appeal include independent claims 39, 75, 80, 85, 86, 87, 89, 91 and 92, which are supported by the specification and drawings as indicated below.

Independent **Claim 39** claims, "[a] method for compressing and transmitting image raster data of pages, comprising the steps of:

> (*see generally substitute specification page 5, lines 5 – 6, and page 21, lines 9 and 10, and reference character S in Figure 11*)

generating a data stream of image raster data from language elements of a graphics language, said data stream containing gray image areas in a form of dither cells whose gray scale values correspond to model dither cells;

> (*substitute specification page 21, lines 9 – 12, "Figure 11 shows the principle of the invention employed for compressing and transmitting the image raster data. The image raster data BD of a page S generated by the RIP module are analyzed according to the aforementioned method steps and rectangles R1 and R2 with identical dither cells are thereby identified." and page 22, lines 6 – 10, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter." and page 13, line 5, "Figures 1A and 1B show the structure of two model dither cells A and B.")*

dividing said image raster data of each one of pages into tiles of a two-dimensional grid ,

each of said tiles include a plurality of said image raster data;

(*substitute specification page 5, lines 8 and 9, and page 14, lines 13 – 15, "Figure 2 schematically shows the division of a page S into identically sized tiles K1, K2, Ki through Kn of a two-dimensional grid network GN Each tile K contains a plurality of image raster data in data lines of equal length."*)

identifying ones of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles;

(*substitute specification page 9, line 20, to page 10, line 1, "A determination is made for every tile as to whether it exclusively contains dither cells or not. When the former applies, the appertaining model dither cell and the gray scale value thereof are determined and this tile is marked." and page 14, lines 19 and 20, "Figure 3 schematically shows the procedure for determining dither cells that are contained in a tile Ka." and page 17, lines 10 – 12, "Figure 7 schematically shows a part of a page with tiles K to which gray scale values G=0, 1, 2 or 3 have been assigned. This assigning of gray scale values corresponds to a marking."*)

identifying position data and gray scale values and corresponding model dither cells for said marked tiles as characterizing data for said marked tiles, and

(*substitute specification page 18, lines 10 – 13, "Figure 8 shows the further treatment of the rectangle Ra within the image raster data of a page S. The position of the upper left corner of the rectangle Ra is identified as characteristic data for the rectangle Ra. Further, the height and width as well as the gray scale value G, the gray scale value G=3 in this case, are identified."*)

transmitting said image raster data of pages including transmitting said characteristic data of said marked tiles for printing of said image raster data without transmitting image raster data of said marked tiles having gray scale values of a predetermined model dither cell."

(*substitute specification page 7, lines 9 – 14, "Preferably, the position of the upper left corner, the height, the width and the gray scale value are determined for each rectangle with reference to a page, and these characteristic data are transmitted, preferably in compressed form. The raster image data of the marked tiles or of the marked rectangles can be removed from the data stream by subtraction; and the remaining data stream compressed according to a standardized compression method and transmitted."*)

Independent **Claim 75** claims "[a] system for compressing and transmitting image raster data, comprising:

(*substitute specification page 8, lines 2-12, "The present invention also provides a system for compressing and transmitting image raster data..."*)

an RIP module that generates a data stream of said image raster data page-by-page from language elements of a graphics language, said data stream containing gray image areas

in a form of dither cells whose gray scale values correspond to model dither cells;

(substitute specification page 22, lines 6 – 10, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates ~~image raster data from language elements of the printer language~~ POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter.")

a two-dimensional grid network by which said image raster data of each page are divided into tiles, each tile including a plurality of image raster data,

(substitute specification page 14, lines 13 – 15, "Figure 2 schematically shows the division of a page S into identically sized tiles K1, K2, Ki through Kn of a two-dimensional grid network GN Each tile K contains a plurality of image raster data in data lines of equal length.")

an appertaining model dither cell and a gray scale value thereof are identified for each tile that contains only dither cells and this tile is marked; and

(substitute specification page 17, lines 10 – 12, "Figure 7 schematically shows a part of a page with tiles K to which gray scale values G=0, 1, 2 or 3 have been assigned. This assigning of gray scale values corresponds to a marking.")

apparatus for transmitting characteristic data of the marked tiles for further processing of the image raster data without transmitting raster image data of marked tiles, said characteristic data including information about a position of the respective tile and a respective gray scale value."

(substitute specification page 18, lines 10 – 14, "Figure 8 shows the further treatment of the rectangle Ra within the image raster data of a page S. The position of the upper left corner of the rectangle Ra is identified as characteristic data for the rectangle Ra. Further, the height and width as well as the gray scale value G, the gray scale value G=3 in this case, are identified." and page 18, line 21, to page 19, line 1, "Only those rectangles whose number of tiles exceeds a predetermined value are then selected from this list and their characteristic data separately transmitted.")

Independent **Claim 80** claims "[a] method for compressing and transmitting image raster data of pages, comprising the steps of:

(see generally substitute specification page 5, lines 5 – 6, and page 21, lines 9 and 10, and reference character S in Figure 11)

generating a data stream of image raster data page-by-page from language elements of a graphics language, said data stream containing gray picture elements in a form of dither cells whose gray scale values correspond to model dither cells;

(substitute specification page 21, lines 9 – 12, "Figure 11 shows the principle of the invention employed for compressing and transmitting the image raster data. The image raster data BD of a page S generated by the RIP module are analyzed according to the aforementioned method steps and rectangles R1 and R2 with identical dither cells are thereby identified." and page 22, lines 6 – 10, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter." and page 13, line 5, "Figures 1A and 1B show the structure of two model dither cells A and B.")

determining at least one area that contains only dither cells;

(substitute specification page 9, line 20, to page 10, line 1, "A determination is made for every tile as to whether it exclusively contains dither cells or not. When the former applies, the appertaining model dither cell and the gray scale value thereof are determined and this tile is marked." and page 14, lines 19 and 20, "Figure 3 schematically shows the procedure for determining dither cells that are contained in a tile Ka.")

identifying an appertaining model dither cell and a gray scale value of said at least one area and marking said at least one area; and

(substitute specification page 17, lines 10 – 12, "Figure 7 schematically shows a part of a page with tiles K to which gray scale values G=0, 1, 2 or 3 have been assigned. This assigning of gray scale values corresponds to a marking.")

transmitting characteristic data of the marked area for printing of the image raster data without transmitting the raster image data of said at least one area, said characteristic data contain information about a position of the respective tile and the respective gray scale value."

(substitute specification page 18, lines 10 – 14, "Figure 8 shows the further treatment of the rectangle Ra within the image raster data of a page S. The position of the upper left corner of the rectangle Ra is identified as characteristic data for the rectangle Ra. Further, the height and width as well as the gray scale value G, the gray scale value G=3 in this case, are identified." and page 18, line 21, to page 19, line 1, "Only those rectangles whose number of tiles exceeds a predetermined value are then selected from this list and their characteristic data separately transmitted.")

Independent **Claim 85** claims "[a] computer program product, comprising:

(substitute specification page 9, lines 11 – 13, " According to the invention, a computer program product includes a computer-readable medium with which commands are offered in encoded form, these, after the loading of the computer program, causing the computer to implement the steps set forth above.")

a computer-readable medium on which is stored a computer program having commands in encoded form, said computer program causing a computer to implement the following steps:

(substitute specification page 9, lines 16 – 18, "The invention also provides a computer-readable medium that contains a computer program which causes a computer to implement the above set-forth steps." and page 22, lines 6 – 12, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter. Using a diskette 11, the computer program can have been loaded into the computer 10 on a permanent storage (hard disk) or into a volatile main memory (RAM).")

generating a data stream of image raster data from language elements of a graphics language, said data stream containing gray image areas in a form of dither cells whose gray scale values correspond to model dither cells;

(substitute specification page 21, lines 9 – 12, "Figure 11 shows the principle of the invention employed for compressing and transmitting the image raster data. The image raster data BD of a page S generated by the RIP module are analyzed according to the aforementioned method steps and rectangles R1 and R2 with identical dither cells are thereby identified." and page 22, lines 6 – 10, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter." and page 13, line 5, "Figures 1A and 1B show the structure of two model dither cells A and B.")

dividing said image raster data of each one of said pages into tiles of a two-dimensional grid network, each of said tiles include a plurality of said image raster data;

(substitute specification page 5, lines 8 and 9, and page 14, lines 13 – 15, "Figure 2 schematically shows the division of a page S into identically sized tiles K1, K2, Ki through Kn of a two-dimensional grid network GN Each tile K contains a plurality of image raster data in data lines of equal length.")

identifying appertaining ones of model dither cells and said gray scale values for each of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles; and

(substitute specification page 17, lines 10 – 12, "Figure 7 schematically shows a part of a page with tiles K to which gray scale values G=0, 1, 2 or 3

have been assigned. This assigning of gray scale values corresponds to a marking.")

transmitting characteristic data of said marked tiles for further processing of said image raster data without transmitting raster image data of said marked tiles, said characteristic data containing information about a position of a respective one of said tiles and a respective one of said gray scale values."

(substitute specification page 18, lines 10 – 14, "Figure 8 shows the further treatment of the rectangle Ra within the image raster data of a page S. The position of the upper left corner of the rectangle Ra is identified as characteristic data for the rectangle Ra. Further, the height and width as well as the gray scale value G, the gray scale value G=3 in this case, are identified." and page 18, line 21, to page 19, line 1, "Only those rectangles whose number of tiles exceeds a predetermined value are then selected from this list and their characteristic data separately transmitted.")

Independent **Claim 86** claims "[a] computer program product, comprising:

(substitute specification page 9, lines 11 – 13, " According to the invention, a computer program product includes a computer-readable medium with which commands are offered in encoded form, these, after the loading of the computer program, causing the computer to implement the steps set forth above.")

a computer-readable medium on which is stored a computer program having commands in encoded form, said computer program causing a computer to implement the following steps:

(substitute specification page 9, lines 16 – 18, "The invention also provides a computer-readable medium that contains a computer program which causes a computer to implement the above set-forth steps." and page 22, lines 6 – 12, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter. Using a diskette 11, the computer program can have been loaded into the computer 10 on a permanent storage (hard disk) or into a volatile main memory (RAM).")

generating a data stream of image raster data page-by-page from language elements of a graphics language, said data stream containing gray picture elements in a form of dither cells whose gray scale values are defined by model dither cells;

(substitute specification page 21, lines 9 – 12, "Figure 11 shows the principle of the invention employed for compressing and transmitting the image raster data. The image raster data BD of a page S generated by the RIP module are analyzed according to the aforementioned method steps and

rectangles R1 and R2 with identical dither cells are thereby identified." and page 22, lines 6 – 10, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter." and page 13, line 5, "Figures 1A and 1B show the structure of two model dither cells A and B.")

determining at least one area that contains only dither cells;

(substitute specification page 9, line 20, to page 10, line 1, "A determination is made for every tile as to whether it exclusively contains dither cells or not. When the former applies, the appertaining model dither cell and the gray scale value thereof are determined and this tile is marked." and page 14, lines 19 and 20, "Figure 3 schematically shows the procedure for determining dither cells that are contained in a tile Ka.")

identifying an appertaining model dither cell and a gray scale value of said at least one area

and marking said at least one area; and

(substitute specification page 17, lines 10 – 12, "Figure 7 schematically shows a part of a page with tiles K to which gray scale values G=0, 1, 2 or 3 have been assigned. This assigning of gray scale values corresponds to a marking.")

transmitting characteristic data of the marked area for further processing of the image raster data without transmitting raster image data of the marked tiles have a predetermined gray scale value, said characteristic data contain information about a position of the respective tile and the respective gray scale value."

(substitute specification page 18, lines 10 – 14, "Figure 8 shows the further treatment of the rectangle Ra within the image raster data of a page S. The position of the upper left corner of the rectangle Ra is identified as characteristic data for the rectangle Ra. Further, the height and width as well as the gray scale value G, the gray scale value G=3 in this case, are identified." and page 18, line 21, to page 19, line 1, "Only those rectangles whose number of tiles exceeds a predetermined value are then selected from this list and their characteristic data separately transmitted.")

Independent **Claim 87** claims "[a] computer program element stored on a computer readable media and executable on a computer, comprising:

(substitute specification page 9, lines 13 – 16, "A computer program element may also be provided comprising commands in encoded form that cause the computer to implement the foregoing steps. The computer program element is preferably present on a computer-readable medium.")

commands in encoded form that cause a computer to implement the following steps: :

(*substitute specification page 9, lines 13 – 16, "A computer program element may also be provided comprising commands in encoded form that cause the computer to implement the foregoing steps. The computer program element is preferably present on a computer-readable medium.")*

~~generating a data stream of image raster data from language elements of a graphics language,~~

said data stream containing gray image areas in a form of dither cells whose gray scale values are determined by model dither cells;

(*substitute specification page 21, lines 9 – 12, "Figure 11 shows the principle of the invention employed for compressing and transmitting the image raster data. The image raster data BD of a page S generated by the RIP module are analyzed according to the aforementioned method steps and rectangles R1 and R2 with identical dither cells are thereby identified." and page 22, lines 6 – 10, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter." and page 13, line 5, "Figures 1A and 1B show the structure of two model dither cells A and B.")*

dividing said image raster data of each one of said pages into tiles of a two-dimensional grid network, each of said tiles include a plurality of said image raster data;

(*substitute specification page 5, lines 8 and 9, and page 14, lines 13 – 15, "Figure 2 schematically shows the division of a page S into identically sized tiles K1, K2, Ki through Kn of a two-dimensional grid network GN Each tile K contains a plurality of image raster data in data lines of equal length.")*

identifying appertaining ones of model dither cells and said gray scale values for each of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles; and

(*substitute specification page 17, lines 10 – 12, "Figure 7 schematically shows a part of a page with tiles K to which gray scale values G=0, 1, 2 or 3 have been assigned. This assigning of gray scale values corresponds to a marking.")*

transmitting characteristic data of said marked tiles for further processing of said image raster data without transmitting raster image data of marked cells having characteristic data corresponding to a predetermined model dither cell, said characteristic data containing information about a position of a respective one of said tiles and a respective one of said gray scale values."

(*substitute specification page 18, lines 10 – 14, "Figure 8 shows the further treatment of the rectangle Ra within the image raster data of a page S. The position of the upper left corner of the rectangle Ra is identified as characteristic data for the rectangle Ra. Further, the height and width as*

well as the gray scale value G, the gray scale value G=3 in this case, are identified." and page 18, line 21, to page 19, line 1, "Only those rectangles whose number of tiles exceeds a predetermined value are then selected from this list and their characteristic data separately transmitted.")

Independent **Claim 89** claims "[a] computer program element stored on a computer readable media and executable on a computer, comprising:

(substitute specification page 9, lines 13 – 16, "A computer program element may also be provided comprising commands in encoded form that cause the computer to implement the foregoing steps. The computer program element is preferably present on a computer-readable medium.")

commands in encoded form that cause a computer to implement the following steps:

(substitute specification page 9, lines 13 – 16, "A computer program element may also be provided comprising commands in encoded form that cause the computer to implement the foregoing steps. The computer program element is preferably present on a computer-readable medium.")

generating a data stream of image raster data page-by-page from language elements of a graphics language, said data stream containing gray picture elements in a form of dither cells whose gray scale values are defined by model dither cells;

(substitute specification page 21, lines 9 – 12, "Figure 11 shows the principle of the invention employed for compressing and transmitting the image raster data. The image raster data BD of a page S generated by the RIP module are analyzed according to the aforementioned method steps and rectangles R1 and R2 with identical dither cells are thereby identified." and page 22, lines 6 – 10, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter." and page 13, line 5, "Figures 1A and 1B show the structure of two model dither cells A and B.")

determining at least one area that contains only dither cells;

(substitute specification page 9, line 20, to page 10, line 1, "A determination is made for every tile as to whether it exclusively contains dither cells or not. When the former applies, the appertaining model dither cell and the gray scale value thereof are determined and this tile is marked." and page 14, lines 19 and 20, "Figure 3 schematically shows the procedure for determining dither cells that are contained in a tile Ka.")

identifying an appertaining model dither cell and a gray scale value of said at least one area and marking said at least one area; and

(substitute specification page 17, lines 10 – 12, "Figure 7 schematically shows a part of a page with tiles K to which gray scale values G=0, 1, 2 or 3

have been assigned. This assigning of gray scale values corresponds to a marking.")

transmitting characteristic data of the marked area for further processing of the image raster data, said characteristic data contain information about a position of the respective tile and the respective gray scale value.

(substitute specification page 18, lines 10 – 14, "Figure 8 shows the further treatment of the rectangle Ra within the image raster data of a page S. The position of the upper left corner of the rectangle Ra is identified as characteristic data for the rectangle Ra. Further, the height and width as well as the gray scale value G, the gray scale value G=3 in this case, are identified." and page 18, line 21, to page 19, line 1, "Only those rectangles whose number of tiles exceeds a predetermined value are then selected from this list and their characteristic data separately transmitted.")"

Independent **Claim 91** claims "[a] computer-readable medium that contains a computer program, comprising:

(substitute specification page 9, lines 16 – 18, "The invention also provides a computer-readable medium that contains a computer program which causes a computer to implement the above set-forth steps.")

the computer program on the computer-readable medium which causes a computer to implement the following steps:

(substitute specification page 9, lines 16 – 18, "The invention also provides a computer-readable medium that contains a computer program which causes a computer to implement the above set-forth steps.")

generating a data stream of image raster data from language elements of a graphics language, said data stream containing gray image areas in a form of dither cells whose gray scale values are determined by model dither cells;

(substitute specification page 21, lines 9 – 12, "Figure 11 shows the principle of the invention employed for compressing and transmitting the image raster data. The image raster data BD of a page S generated by the RIP module are analyzed according to the aforementioned method steps and rectangles R1 and R2 with identical dither cells are thereby identified." and page 22, lines 6 – 10, "Figure 12 shows a block diagram of a schematic illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter." and page 13, line 5, "Figures 1A and 1B show the structure of two model dither cells A and B.")

dividing said image raster data of each page into tiles of a two-dimensional grid network, each of said tiles include a plurality of said image raster data;

(*substitute specification page 5, lines 8 and 9, and page 14, lines 13 – 15, "Figure 2 schematically shows the division of a page S into identically sized tiles K1, K2, Ki through Kn of a two-dimensional grid network GN Each tile K contains a plurality of image raster data in data lines of equal length."*)

identifying appertaining ones of model dither cells and said gray scale values for each of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles; and

(*substitute specification page 17, lines 10 – 12, "Figure 7 schematically shows a part of a page with tiles K to which gray scale values G=0, 1, 2 or 3 have been assigned. This assigning of gray scale values corresponds to a marking."*)

transmitting characteristic data of said marked tiles for further processing of said image raster data, said characteristic data containing information about a position of a respective one of said tiles and a respective one of said gray scale values."

(*substitute specification page 18, lines 10 – 14, "Figure 8 shows the further treatment of the rectangle Ra within the image raster data of a page S. The position of the upper left corner of the rectangle Ra is identified as characteristic data for the rectangle Ra. Further, the height and width as well as the gray scale value G, the gray scale value G=3 in this case, are identified." and page 18, line 21, to page 19, line 1, "Only those rectangles whose number of tiles exceeds a predetermined value are then selected from this list and their characteristic data separately transmitted."*)

Independent **Claim 92** claims "[a] computer-readable medium that contains a computer program, comprising:

(*substitute specification page 9, lines 16 – 18, "The invention also provides a computer-readable medium that contains a computer program which causes a computer to implement the above set-forth steps."*)

the computer program on the computer-readable medium which causes a computer to implement the following steps:

(*substitute specification page 9, lines 16 – 18, "The invention also provides a computer-readable medium that contains a computer program which causes a computer to implement the above set-forth steps."*)

generating a data stream of image raster data page-by-page from language elements of a graphics language, said data stream containing gray picture elements in a form of dither cells whose gray scale values are defined by model dither cells;

(*substitute specification page 21, lines 9 – 12, "Figure 11 shows the principle of the invention employed for compressing and transmitting the image raster data. The image raster data BD of a page S generated by the RIP module are analyzed according to the aforementioned method steps and rectangles R1 and R2 with identical dither cells are thereby identified." and page 22, lines 6 – 10, "Figure 12 shows a block diagram of a schematic*

illustration of the inventive method or, respectively, of the inventive system. In a computer 10, an RIP module RIP generates image raster data from language elements of the printer language POSTSCRIPT PS that are investigated in the computer 10 with a corresponding computer program according to the above-described analysis steps, these corresponding to a filter function in a raster filter." and page 13, line 5, "Figures 1A and 1B show the structure of two model dither cells A and B.")

determining at least one area that contains only dither cells;

(substitute specification page 9, line 20, to page 10, line 1, "A determination is made for every tile as to whether it exclusively contains dither cells or not. When the former applies, the appertaining model dither cell and the gray scale value thereof are determined and this tile is marked." and page 14, lines 19 and 20, "Figure 3 schematically shows the procedure for determining dither cells that are contained in a tile Ka.")

identifying an appertaining model dither cell and a gray scale value of said at least one area

and marking said at least one area; and

(substitute specification page 17, lines 10 – 12, "Figure 7 schematically shows a part of a page with tiles K to which gray scale values G=0, 1, 2 or 3 have been assigned. This assigning of gray scale values corresponds to a marking.")

transmitting characteristic data of the marked area for further processing of the image raster data, said characteristic data contain information about a position of the respective tile and the respective gray scale value."

(substitute specification page 18, lines 10 – 14, "Figure 8 shows the further treatment of the rectangle Ra within the image raster data of a page S. The position of the upper left corner of the rectangle Ra is identified as characteristic data for the rectangle Ra. Further, the height and width as well as the gray scale value G, the gray scale value G=3 in this case, are identified." and page 18, line 21, to page 19, line 1, "Only those rectangles whose number of tiles exceeds a predetermined value are then selected from this list and their characteristic data separately transmitted.")

(vi). GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

a) The first issue on appeal whether claims 39 – 46, 51, 53 – 56, 58 – 61, 70, 72, 75 – 77, 79 – 83 and 85 – 88 as obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451 and Knox U.S. Patent No. 5,649,073;

b) The second issue on appeal whether claims 47, 48 and 50 as obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding

U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and Hiratsuka U.S. Patent No. 4,758,897;

c) The third issue on appeal whether claim 49 as obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073, Hiratsuka U.S. Patent No. 4,758,897 and Wong U.S. Patent No. 4,032,978;

d) The fourth issue on appeal whether claims 52, 57, 62, 71 and 78 as obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and Venkateswar European Patent Application 0 774 858 A2;

e) The fifth issue on appeal whether claims 63, 65 and 69 as obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and Endoh U.S. Patent No. 4,652,935;

f) The sixth issue on appeal whether claims 64 and 66 as obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073, Endoh U.S. Patent No. 4,652,935 and Brindle U.S. Patent No. 5,526,469;

g) The seventh issue on appeal whether claims 67 and 68 as obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and Züfle U.S. Patent No. 5,940,584;

h) The eighth issue on appeal whether claims 73 and 74 as obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073, Venkateswar European Patent Application 0 774 858 A2 and Applicant's alleged admitted prior art;

i) The ninth issue on appeal whether claim 84 as obvious under 35 U.S.C.

§103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and alleged well-known prior art; and

j) The tenth issue on appeal whether claims 89 – 92 as obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451.

(vii). ARGUMENT

a) Claims 39 – 46, 51, 53 – 56, 58 – 61, 70, 72, 75 – 77, 79 – 83 and 85 – 88 are not obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451 and Knox U.S. Patent No. 5,649,073.

The **Clouthier** U.S. Patent No. 5,949,964 discloses a method for halftone processing of documents intended for printing wherein each image structure in the document is classified as either text, graphics or a raster image, and an identifier tag denoting the image type is assigned to the image structure for transmittal with the document data through the document data processing chain. (col. 3 line 64 – col. 4 line 8) The determination of image type is accomplished by examining the incoming data stream to determine if the data string is in a language characteristic of text, or in a language characteristic of graphics, or if it is already rasterized data. The corresponding tag that is applied to the data is carried with the document data through the data processing stream, including through compression, storage, and decompression of the data. The image data corresponding to the tagged portions is not removed from the data stream but is also carried through the processing stream. The image type tag enables the halftone module to use the appropriate halftone processing for each image type. The reference therefore teaches matching the halftone processing to the image type for each section of the document. To avoid artifacts in the document, the page building operation and halftone operation are separated from one another.

Details of the halftone processing are disclosed in the reference. The selected halftone procedure as identified by the tag is applied to each pixel of each color plane of the image. (col. 8. lines 37 -39) The halftoning action reduces the number of color intensities the printer must reproduce to better match the printer capabilities. It does this by comparison of the color value to threshold values. The threshold values are represented as a matrix of cells that is logically tiled across the image in order to mix the values so as to smooth the image. A dither operation across 3x3 groups of pixels, so-called super pixels, may be

performed to improve halftoning operations but at a cost of loosing resolution. (col. 6, lines 50 – 62)

Thus, **Clouthier** discloses transmitting the image raster data for printing, along with the designations of image type. The inclusion of the image raster data in the transmitted file causes the transmitted file to be large, a problem that the present invention seeks to overcome. **Clouthier** also provides that the image file is compressed prior to transmission and uncompressed after transmission. Compression and decompression of the large file uses resources and time, also a problem addressed by the present invention.

The present invention provides an advantage over **Clouthier** in that the image raster data of portions of a document data stream need not be transmitted. Instead, gray scale regions are identified by a model dither cell and gray scale value and location information, for example, and this characterizing data is transmitted instead of the image raster information for the region. The quantity of data to be transmitted is reduced considerably. Further, any compression is faster and uses less resources.

Clouthier is combined with **Spaulding**. The **Spaulding** U.S. Patent No. 5,822,451 describes a method for halftoning multi-channel color images that seeks to minimize the visibility of the halftone pattern, which in the reference is termed the visible cost value or cost function. An optimization of dither cells is provided for different color channels (see column 3, lines 1-25). In this context, optimized dither cells are selected for each color channel by means of look-up tables (LUTs) and transferred to the control. Jointly optimized halftone patterns are used to account for interactions between color channels so that the halftone patterns are less visible to human observers. The problem addressed in the reference is in minimizing the visibility of the halftone pattern based on human visual system sensitivity by addressing dot placement and dot size, for example. Applicant notes that the background portion of the **Spaulding** reference describes forming a dither matrix that is tiled across an image as a feature of the prior art.

Spaulding, even when considered with **Clouthier**, does not teach or suggest the claimed invention. In particular, there is no teaching to mark tiles containing dither cells, determine the corresponding model dither cells as well as the gray scale value thereof and transmit the position of these tiles and the corresponding gray scale value are used instead of the document data for these cells in order to reduce the data to be transmitted for the page.

The Examiner has recognized a difference between the present invention and the combination of **Clouthier** and **Spaulding**, namely that the combination of **Clouthier** and **Spaulding** fails to show transmitting characteristic data for the marked tiles in the data stream without transmitting image raster data of the marked tiles. The examiner asserts that **Knox** U.S. Patent No. 5,649,073 discloses this feature and is combinable with **Clouthier** and **Spaulding**, thus resulting in the claimed invention. Applicants respectfully traverse this rejection.

The **Knox** et al. reference teaches calibration of a printer using test patterns. The dots produced by a particular printer in halftone operation to generate a gray area are calibrated by modeling the printing process. Test patterns are printed, the gray measurement is obtained and correlated with a combination of spots so that correction values are obtained. A two step calibration process first models the printer then predicts the response of the halftoning process. The generation of the printer model means that the halftoning dots and algorithm can be calibrated using the prediction of the printer model without actually printing test patterns on the printer.

It would not have been obvious to combine the printer calibration of **Knox** with the halftone processing disclosed in **Clouthier** and **Spaulding**. Calibration of a printer prior to performing printing is desirable, but these are performed at different times and for different purposes and the prior art provides no incentive to combining the teachings from these two fields into one method.

The Examiner has explained the combination by asserting that the references are related by being in the field of correction of digital image data without requiring transmission of actual image data. However, **Clouthier** does transmit the actual image data as does the **Spaulding** reference, so the reasoning of the Examiner for combining the references is not supported by the references.

Even if combined, the **Clouthier**, **Spaulding** and **Knox** references do not show the claimed invention. The claimed invention provides that the actual raster data for marked tiles is not transmitted for printing. In **Knox**, the calibration step wherein the data is not transmitted also does not perform any printing, only a testing based on a model of the printer derived in the first calibration step. As such, no reference in the combination teaches that printing can be performed while not transmitting the raster data. The claimed invention is

therefore directed to features not found even in the combined teachings of the art and as such is a non-obvious improvement thereover.

Addressing the Examiner's comments, the Examiner asserts (at part 4, page 3, of the final action) that **Clouthier** discloses dividing the image raster data into tiles of a two dimensional grid, finding support for this assertion in Figure 1(14) and col. 3, lines 28 – 32, of the reference. Tiles are not taught or suggested in the cited portion of the reference. The only mention of tiles in **Clouthier** is at col. 6, lines 32 – 42, wherein a threshold matrix is tiled across an image in order to compare each pixel value to a cell threshold value as part of the halftoning process. In **Clouthier**, this is performed immediately prior to printing to accommodate printers that print in fewer intensity levels than the number of intensity levels in the image data and has nothing to do with identifying what type of image data is contained in the tiles. The tiling of the threshold matrix of cells in **Clouthier** would not lead the person of ordinary skill to divide an image into tiles for examination as to whether each tile contains only dither cells.

The Examiner asserts that **Clouthier** shows identifying tiles that contain only dither cells, but the passage cited in support (col. 5, lines 40 – 47) is instead a discussion of the operation of the **Clouthier** halftone module's handling of image portions that have previously been marked as raster image portions. First, this passage has nothing to do with identifying the image type. According to **Clouthier** it is the language of the data stream, i.e. printer control language, graphics language or rasterized pixels (col. 3 lines 31 – 45) that identifies the image type. Second, the image type has been determined long prior in **Clouthier**, not during the halftone processing, which in **Clouthier** is performed in halftone module that is provided just before the print engine.

Contrary to the Examiner's assertion, **Clouthier** does not teach marking the tiles (either at col. 5, lines 6- 12, or elsewhere). Pixels are tagged, but not the tiled matrix disclosed in the reference. Further, **Clouthier** does not teach identifying gray scale values of tiles (at col. 6, lines 12 – 17, or elsewhere). Pixels are quantized, but not tiles. Lacking this characteristic data for tiles as defined in the claim, there is no teaching in **Clouthier** to transmit the characteristic data.

Even if elements of the present invention are shown in the **Clouthier** reference as asserted by the Examiner, they are taken out of context and out of sequence in the data processing stream from the that provided by the present invention. There is nothing in the art

that would suggest the ordering of the steps provided by the claimed invention, nor is there a teaching, suggestion or motivation to re-order the elements shown in the prior art in a way to achieve the advantages of the claimed invention.

Addressing the Examiner's comments as the **Knox** reference, no transmitting of characteristic data without transmitting the image raster data is found at the passages cited by the Examiner (page 4, lines 9 – 13, of the action) nor elsewhere in the reference. **Knox** seeks to model the printer and calibrate based on the model. The characteristic data of tiles or regions is not transmitted to the printer, contrary to the Examiner's assertion.

The invention as defined in the claims distinguishes over and is non-obvious over the combined teachings of the prior art. In particular, **claim 39** claims "identifying ones of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles." As show above, this feature is not found in the prior art. Claim 39 further provides "transmitting said image raster data of pages including transmitting said characteristic data of said marked tiles for printing of said image raster data without transmitting image raster data of said marked tiles having gray scale values of a predetermined model dither cell." This element is not shown or suggested in the prior art nor is there a motivation to provide this element. This is a feature which is completely unforeseen in the prior art yet provides significant advantages in reducing the quantity of data that must be transferred and the quantity of data that is processed for printing.

In **claim 40** is claimed "said model dither cell with a higher gray scale value at least contains inked picture elements at same positions as said model dither cell with a next-lower gray scale value." The Examiner finds this in **Clouthier**, yet **Clouthier** does not address the position of the inked picture elements in the way that is claimed here and so claim 40 is a non-obvious improvement over the combined teachings of the art.

Claim 51 claims "transmitting said characteristic data of said polygon for further processing of said image raster data instead of transmitting raster data of said polygon." This feature is not shown in the combined prior art. The Examiner asserts that **Knox** shows transmitting only characteristic data in a calibrate mode, but **Knox** fails to show this feature. In the first passage of the **Knox** reference cited by the Examiner in support of this rejection at col. 5, lines 20 - 30, the model printer has been generated and is used in either a first mode to fit the measured response of the printer to the test patterns or to predict the response of the printer. In the second passage, the printer has printed a test pattern that is then scanned and

the results of the scanned pattern are measured for reflectance value and stored. These passages do not call for transmitting characteristic data instead of raster data, contrary to the final rejection. The claim 51 is therefore non-obvious over the cited art.

Claim 58 claims "organizing said list such that rectangles with a descending number of tiles assume a descending rank in the list; and transmitting only those rectangles from said list whose number of tiles exceeds a predetermined value for further processing." The Examiner asserts that this feature is found in **Clouthier**, but no mention of a list ranked in descending order is found in the **Clouthier** reference, either at the passages cited by the Examiner or otherwise. Without support in the prior art, the rejection is in error and should be withdrawn.

Claim 59 claims "limiting a number of rectangles of said list to a predetermined value." The passage of **Clouthier** cited by the Examiner to reject this feature refers to matching the resolution of the image to the capabilities of the printer, and does not mention limiting a number of regions of that are tagged by model dither cells. Claim 59 therefore represents a non-obvious improvement over the cited art.

With regard to **claims 75, 85 and 87**, the prior art does not teach identifying a gray scale value for each identified tile that contains only dither cells, contrary to the Examiner's assertion. As discussed above, **Clouthier** tags data streams based on language without regard to any tile arrangement.. Further, the **claim 75** claims "apparatus for transmitting characteristic data of the marked tiles for further processing of the image raster data without transmitting raster image data of marked tiles," which for the reasons above is not shown or suggested in the prior art. **Claim 85** claims "transmitting characteristic data of said marked tiles for further processing of said image raster data without transmitting raster image data of said marked tiles" and **claim 87** claims similar wording. For the reasons set forth above, this feature is not found in the art and represents a non-obvious improvement thererover. The **Knox** reference simply does not show this feature, contrary to the Examiner's assertion.

Claim 77 claims "said apparatus for transmitting transmits characteristic data of said polygon for further processing of the image raster data instead of transmitting characteristic data of individual marked tiles of the polygon." The **Knox** reference, contrary to the position expressed in the final rejection, does not show or suggest transmitting characteristic data of polygons instead of characteristic data or tiles. Claim 77 is thus non-obvious over the cited art.

Claim 80 claims "transmitting characteristic data of the marked area for printing of the image raster data without transmitting the raster image data of said at least one area," which is not found in the prior art for the reasons set forth above. **Claim 86** is non-obvious for the same reasons.

The remaining claims listed in this section are not argued separately.

Thus, the invention as defined in the claims has been shown to be a non-obvious improvement over the art. The final rejection of the claims has been shown to be in error. Reversal of the claim rejections is hereby requested.

b) Claims 47, 48 and 50 are not obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and Hiratsuka U.S. Patent No. 4,758,897.

The **Clouthier**, **Spaulding** and **Knox** references are discussed in section a), which is incorporated herein by reference.

The **Hiratsuka** U.S. Patent No. 4,758,897 discloses a method and apparatus for estimating a halftone image from a binary image. A unit area is set in the binary image and the white pixels in the unit area are counted. The unit area is then shifted by one pixel and the number of white pixels in the unit area are again counted. The size if the unit area being considered differs for different portions of the binary image, so that a smaller unit area is selected for high contrast area and a larger unit area is selected for lower contrast areas of the image. Once a halftone image is obtained, it can be filtered to obtain a binary image. The image may be reduced or enlarged using this method.

Claim 47 depends indirectly from claim 39. Claim 39 has been shown to be a non-obvious improvement over the cited prior art. The **Hiratsuka** reference does not teach or suggest the aspects of the claimed invention that are lacking in the combination of **Clouthier**, **Spaulding** and **Knox**, so that **claim 47** is therefore also non-obvious. The same comments apply to **claims 48 and 50**.

c) Claim 49 are not obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073, Hiratsuka U.S. Patent No. 4,758,897 and Wong U.S. Patent No. 4,032,978.

The **Clouthier**, **Spaulding** and **Knox** references are discussed in section a), which is incorporated herein by reference. The **Hiratsuka** reference is discussed in section b), which is incorporated herein by reference.

The **Wong** U.S. Patent No. 4,032,978 discloses a pseudo halftone print generator that uses a random number generator to provide random starting points for the lines of print so that Moire effects are eliminated in the printed output.

Claim 49 depends indirectly from claim 39. Claim 39 has been shown to be a non-obvious improvement over the cited prior art. The **Wong** reference does not teach or suggest the aspects of the claimed invention that are lacking in the combination of **Clouthier**, **Spaulding**, **Knox** and **Hiratsuka**, so that **claim 49** is therefore also non-obvious.

d) Claims 52, 57, 62, 71 and 78 are not obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and Venkateswar European Patent Application 0 774 858 A2.

The **Clouthier**, **Spaulding** and **Knox** references are discussed in section a), which is incorporated herein by reference.

The **Venkateswar** European Patent Application 0 774 858 A2 discloses a printing process in which the image data is divided into screen cells. The reference teaches adapting the compression scheme for each macrocell using information from the RIP module. Applicant submits that this does not equate to compressing and transmitting the characteristic data without the raster data. As such, the claimed invention of claim 52 is non-obvious over the combination of four prior art references.

Claim 52 depends indirectly from claim 39. Claim 39 has been shown to be a non-obvious improvement over the cited prior art. The **Venkateswar** reference does not teach or suggest the aspects of the claimed invention that are lacking in the combination of **Clouthier**, **Spaulding** and **Knox**, so that **claim 52** is therefore also non-obvious. The same comments apply to **claims 57, 62, 71 and 78.**

e) Claims 63, 65 and 69 are not obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and Endoh U.S. Patent No. 4,652,935.

The **Clouthier**, **Spaulding** and **Knox** references are discussed in section a), which is incorporated herein by reference.

The **Endoh** U.S. Patent No. 4,652,935 discloses a coding system that provides a progressive increase in resolution for the receiver of facsimile data so that the facsimile receiver first sees the fax image as a low resolution rough image and then as progressively higher resolution images. The person receiving the facsimile data, who is viewing it on a screen as the fax comes in, can halt the reception of the fax whenever the resolution is sufficient. To prepare the image for the graded resolution transmission, the image is resolved into four planes. The picture elements are encoded in the four planes for transfer from a sending side to a receiving side. The receiving side receives the data for the plane one first and the rough image is displayed with two gradation levels. When the data for plane two is received, the data of plane two is combined with the data of plane one and the gradation levels of the image is increased to four. Receiving the third plane information increased the gradation levels to eight, and so on.

The Examiner cites the **Endoh** reference, and in particular the passages describing the encoder device shown in Figure 10 wherein extraction of the picture elements by the picture element detector is noted. The Examiner relies on the term "extraction" in column 12, line 37, to assert that the reference teaches removal picture data by subtraction of the image data stream. However, the extraction mentioned in the cited passage is explained further at col. 11, lines 37 – 56, wherein the elements of Figure 10 include, "121 a reference picture element detector for extracting the values of four reference picture elements from the one-frame memory..." Further, col. 12, line 52, to col. 13, line 2, provides that the picture element detector obtains the value of the of the picture elements that are being encoded; this reading of the value being termed "extraction" in the reference. Such reading of picture element values is not, contrary to the Examiner's position, a removal of the data from the data stream. There is no mention of removal or subtraction of image data from the data stream as asserted by the Examiner. The reference completely fails to support the rejection.

Claim 63 claims "removing said raster image data of said marked tiles from said data stream by subtraction." As explained above, the **Endoh** reference does not teach or suggest removal of data by subtraction. This aspect of the claimed invention is not found in the prior art even when all four of the references are considered in combination. As such, the claimed invention is non-obvious over the prior art and the rejection is therefore in error.

Claim 65 has a similar limitation and is not argued separately.

Clam 69 claims "recompiling a transmitted image raster data using an OR function." The passage of the **Endoh** reference cited in support of this feature by the Examiner refers only to decoding images transmitted in different resolutions and would not teach the person of ordinary skill to reassemble an image where the raster data is not transmitted for portions of the image and instead characteristic data is transmitted. As such, the **Endoh** reference would not teach or suggest the invention of claim 69 to the person of ordinary skill and the claim is thus non-obvious thereover.

f) Claims 64 and 66 are not obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073, Endoh U.S. Patent No. 4,652,935 and Brindle U.S. Patent No. 5,526,469.

The **Clouthier**, **Spaulding** and **Knox** references are discussed in section a), which is incorporated herein by reference. The **Endoh** reference is discussed in section e), which is incorporated herein by reference.

The **Brindle** U.S. Patent No. 5,526,469 discloses a server based system in which a guesser 34 examines the data string of image data for evidence of image format so that TIFF data can be distinguished from CALS data, for example, for different handling. The guesser 34 instructs a library to provide a format variable set for the identified format so that the data may be translated for printing . The Examiner apparently cites **Brindle** only for the statement that Fax Group 4 formats are in common use for facsimile data. The **Brindle** reference does not lead the person of ordinary skill to the invention of **claims 64** and **66** even when combined with **Clouthier, Spaulding, Knox** and **Endoh**. Further, requiring the combination of five separate references to support a rejection, while not beyond what might be possible by the person of ordinary skill where there is some linking suggestions in the references, is clearly beyond what the ordinary person would consider in view of the quite different problems addressed by this particular combination of prior art patents. As such, the very act of selecting these five references is non-obvious.

Claim 64 depends indirectly from claim 39. Claim 39 has been shown to be a non-obvious improvement over the cited prior art. The **Brindle** reference does not teach or suggest the aspects of the claimed invention that are lacking in the combination of **Clouthier**,

Spaulding, **Knox** and **Endoh**, so that **claim 64** is therefore also non-obvious. Similar comments apply with regard to **claim 66.**

g) Claims 67 and 68 are not obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and Züfle U.S. Patent No. 5,940,584.

The **Clouthier**, **Spaulding** and **Knox** references are discussed in section a), which is incorporated herein by reference.

The **Züfle** U.S. Patent No. 5,940,584 discloses a method for electronic filing of documents wherein text and bar codes is filtered out from printing data, converted into index data and the printing data and index data are provided to a data storage for filing. The reference mentions that the print data stream is in SPDS format, which the Examiner cites as the basis for combining this reference with **Clouthier**, **Spaulding** and **Knox**.

Claim 67 depends from claim 39. Claim 39 has been shown to be a non-obvious improvement over the cited prior art. The **Züfle** reference does not teach or suggest the aspects of the claimed invention that are lacking in the combination of **Clouthier**, **Spaulding**, and **Knox**, so that **claim 67** is therefore also non-obvious. Similar comments apply with regard to **claim 68.**

h) Claims 73 and 74 are not obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073, Venkateswar European Patent Application 0 774 858 A2 and Applicant's alleged admitted prior art.

The **Clouthier**, **Spaulding** and **Knox** references are discussed in section a), which is incorporated herein by reference. The **Venkateswar** reference is discussed in section d), which is incorporated herein by reference.

The present invention finds particular utility in high performance printers. Nevertheless, the recognition of the existence of high performance printers does not suggest the non-obvious improvement set forth in claim 39, from which **claims 73** and **74** indirectly depend. The invention is thus non-obvious.

i) Claim 84 are not obvious under 35 U.S.C. §103(a) over the patents to

Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451, Knox U.S. Patent No. 5,649,073 and alleged well-known prior art.

The **Clouthier, Spaulding** and **Knox** references are discussed in section a), which is incorporated herein by reference. The recognition by the Examiner that data is transmitted in compressed form does not suggest the non-obvious improvement set forth in claim 80, from which **claims 84** depends.

j) Claims 89 – 92 are not obvious under 35 U.S.C. §103(a) over the patents to Clouthier U.S. Patent No. 5,949,964 in view of Spaulding U.S. Patent No. 5,822,451.

The **Clouthier** and **Spaulding** references are discussed in section a), which is incorporated herein by reference. Based on the comments in the foregoing, the invention as defined in **claims 89 – 92** is non-obvious over the combined teachings of these references.

The Examiner bears the initial burden of presenting a prima facie case of obviousness under 35 U.S.C. §103, and this has not been done in the present case.

Reversal of the rejections is in order

Grouping of Claims

Applicants assert that the claims should be grouped in the groupings of the claims as set forth by the Examiner in the final rejection and further that separate arguments set forth above require further breaking out of the claim groupings as follows. Thus, the grouping of claims which stand or fall together is as follows:

Group 1: claims 39, 41 – 46, 53 – 56, 60, 61, 70, 72, 75, 76, 79, 81 – 83, 85, 87 and 88.

Group 2: claim 40

Group 3: claim 51

Group 4: claim 58

Group 5: claim 59

Group 6: claim 77

Group 7: claim 63

Group 8: claim 69

Group 9: claims 80 and 86.

Group 10: claims 47, 48 and 50

Group 11: claim 49

Group 12: claims 52, 57, 62, 71 and 78

Group 13: claims 63 and 65

Group 14: claim 69

Group 15: claims 64 and 66

Group 16: claims 67 and 68

Group 17: claims 73 and 74

Group 18: claim 84

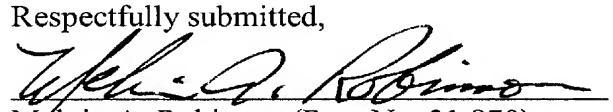
Group 19: claims 89 – 92

CONCLUSION

Applicants submit that the subject matter of the claims 39-92 on appeal is not found in any of the references cited by the Examiner, taken singly or in combination, and those claims are therefore allowable.

Applicants respectfully submit that the Examiner is in error in law and fact in rejecting the claims 39-92 and earnestly solicits reversal of the Final Rejection and allowance of all claims.

Respectfully submitted,



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(viii). CLAIMS APPENDIX

Claims 1-38 (Cancelled)

39. A method for compressing and transmitting image raster data of pages, comprising the steps of:

generating a data stream of image raster data from language elements of a graphics language, said data stream containing gray image areas in a form of dither cells whose gray scale values correspond to model dither cells;

dividing said image raster data of each one of pages into tiles of a two-dimensional grid , each of said tiles include a plurality of said image raster data;

identifying ones of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles;

identifying position data and gray scale values and corresponding model dither cells for said marked tiles as characterizing data for said marked tiles, and

transmitting said image raster data of pages including transmitting said characteristic data of said marked tiles for printing of said image raster data without transmitting image raster data of said marked tiles having gray scale values of a predetermined model dither cell .

40. A method as claimed in claim 39, wherein said dither cells include picture elements that are arranged one of rectangularly and quadratically; and

wherein said model dither cell with a higher gray scale value at least contains inked picture elements at same positions as said model dither cell with a next-lower gray scale value.

41. A method as claimed in claim 40, further comprising the step of:

checking each of said tiles to see whether said tiles contain dither cells of a type of said model dither cell with a lowest gray scale value.

42. A method as claimed in claim 41, wherein said step of checking includes checking tiles tile row by tile row; and further comprising the step of investigating a first row of dither cells of each tile before investigating subsequent rows of dither cells of the tile; and, given a lack of coincidence, the appertaining tile is investigated no further.

43. A method as claimed in claim 41, further comprising the step of:

determining said model dither cell with a highest gray scale value that is contained in all dither cells of a tile for the tile that contains dither cells of a type of said model dither cell with said lowest gray scale value, said model dither cell with the highest gray scale value that is contained in all dither cells of the tile being said predetermined model dither cell; and

assigning a gray scale value of said model dither cell to said tile.

44. A method as claimed in claim 39, wherein said tiles have a uniform row length.

45. A method as claimed in claim 44, wherein said uniform row length corresponds to a bit length of a register of a hardware module with which the present method is implemented.

46. A method as claimed in claim 44, wherein said uniform row length amounts to one of 8, 16, 32, 64 and 128 bits or an additive combination thereof.

47. A method as claimed in claim 46, further comprising the step of:
comparing using a comparison row that contains only said model dither cells and whose length at least corresponds to said uniform row length of a tile so as to determine whether a tile contains dither cells at least with said lowest gray scale value corresponding to said model dither cell; and
implementing said comparing step tile row by tile row.

48. A method as claimed in claim 47, wherein the length of said comparison row amounts to a smallest common multiple of row length of a tile and row length of said dither cell.

49. A method as claimed in claim 48, wherein said dither cell has one of an 8x8 and 10x10 picture element matrix.

50. A method as claimed in claim 47, further comprising the step of:
using said comparison row with appertaining model dither cells for each gray scale value.

51. A method as claimed in claim 39, further comprising the step of:
combining neighboring ones of said tiles having a prescribed gray scale value corresponding to one of said model dither cells to form a polygon;
identifying said characteristic data of said polygon; and
transmitting said characteristic data of said polygon for further processing of said image raster data instead of transmitting raster data of said polygon.

52. A method as claimed in claim 51, wherein said transmitting step transmits said characteristic data in compressed form.

53. A method as claimed in claim 51, wherein said polygon is one of a square and a rectangle.

54. A method as claimed in claim 53, wherein said combining step combines said

tiles to form a rectangle having a common minimal gray scale value; and
wherein said transmitting step transmits said characteristic data of said rectangle.

55. A method as claimed in claim 54, wherein said rectangle contains a sub-rectangle whose tiles have a minimum gray scale value that is higher than a gray scale value of the tiles of said rectangle.

56. A method as claimed in claim 54, further comprising the steps of:
producing a list of said rectangles; and
transmitting said characteristic data of said list.

57. A method as claimed in claim 56, wherein said transmitting step transmits said characteristic data in compressed form.

58. A method as claimed in claim 56, further comprising the steps of:
organizing said list such that rectangles with a descending number of tiles assume a descending rank in the list; and
transmitting only those rectangles from said list whose number of tiles exceeds a predetermined value for further processing.

59. A method as claimed in claim 56, further comprising the step of:
limiting a number of rectangles of said list to a predetermined value.

60. A method as claimed in claim 54, further comprising the steps of:
expanding boundaries of said rectangles by incorporating into said rectangles any dither cells of one of a row and of a sequence that adjoin a corresponding rectangle and that have a same minimum gray scale value as said dither cells of said corresponding rectangle so as to form expanded rectangles.

61. A method as claimed in claims 54, further comprising the steps of:
determining a position of an upper left corner, a height, a width and a gray scale value for each of said rectangles with reference to said pages as said characteristic data; and
transmitting said characteristic data.

62. A method as claimed in claim 61, wherein said transmitting step includes transmitting said characteristic data in compressed form.

63. A method as claimed in claim 39, further comprising the steps of:
removing said raster image data of said marked tiles from said data stream by subtraction; and
compressing a remaining data stream according to a standardized compression method and

transmitting said remaining image raster data stream.

64. A method as claimed in claim 63, wherein said standardized compression method is a FAX G4 compression method.

65. A method as claimed in claim 54, further comprising the steps of:
marking said rectangles that contain only dither cells to produce marked rectangles;
removing said raster image data of said marked rectangles from said data stream by subtraction; and
compressing a remaining image raster data stream according to a standardized compression method and transmitting said remaining data stream.

66. A method as claimed in claim 65, wherein said standardized compression method is a FAX G4 compression method.

67. A method as claimed in claim 39, further comprising the step of:
transmitting data of said marked tiles according to an SPDS data format.

68. A method as claimed in claim 54, further comprising the step of:
transmitting data of said rectangles according to an SPDS data format.

69. A method as claimed in claim 63, further comprising the step of:
recompiling a transmitted image raster data using an OR function.

70. A method as claimed in claim 39, further comprising the step of:
generating said data stream of said image raster data from language elements of the graphics language using an RIP module.

71. A method as claimed in claim 70, wherein said RIP module is a POSTSCRIPT converter module.

72. A method as claimed in claim 39, further comprising the step of:
transmitting said raster data as print raster data to a printer.

73. A method as claimed in claim 72, wherein said printer is a high-performance printer.

74. A method as claimed in claim 73, wherein said high-performance printer has a printing output of at least 400 DIN A4 pages per minute at 600 dpi.

75. A system for compressing and transmitting image raster data, comprising:
an RIP module that generates a data stream of said image raster data page-by-page from

language elements of a graphics language, said data stream containing gray image areas in a form of dither cells whose gray scale values correspond to model dither cells;

a two-dimensional grid network by which said image raster data of each page are divided into tiles, each tile including a plurality of image raster data,

an appertaining model dither cell and a gray scale value thereof are identified for each tile that contains only dither cells and this tile is marked; and

apparatus for transmitting characteristic data of the marked tiles for further processing of the image raster data without transmitting raster image data of marked tiles, said characteristic data including information about a position of the respective tile and a respective gray scale value.

76. A system as claimed in claim 75, wherein said dither cells contain rectangularly or quadratically arranged picture elements; and

wherein the model dither cell with a higher gray scale value at least contains inked picture elements at a same positions as the model dither cell with a next-lower gray scale value.

77. A system as claimed in claims 75, further comprising:

a polygon formed by combining neighboring tiles with predetermined gray scale value corresponding to a model dither cell; and

wherein said apparatus for transmitting transmits characteristic data of said polygon for further processing of the image raster data instead of transmitting characteristic data of individual marked tiles of the polygon.

78. A system as claimed in claim 77, wherein said apparatus for transmitting includes an apparatus for transmitting said characteristic data in compressed format.

79. A system as claimed in claim 77, wherein said polygon is one of a square and a rectangle.

80. A method for compressing and transmitting image raster data of pages, comprising the steps of:

generating a data stream of image raster data page-by-page from language elements of a graphics language, said data stream containing gray picture elements in a form of dither cells whose gray scale values correspond to model dither cells;

determining at least one area that contains only dither cells;

identifying an appertaining model dither cell and a gray scale value of said at least one area and marking said at least one area; and

transmitting characteristic data of the marked area for printing of the image raster data without transmitting the raster image data of said at least one area, said characteristic data contain information about a position of the respective tile and the respective gray scale

value.

81. A method as claimed in claim 80, wherein said dither cells contain one of rectangularly and quadratically arranged picture elements; and

wherein said model dither cell with a higher gray scale value at least contains inked picture elements at a same positions as said model dither cell with a next-lower gray scale value.

82. A method as claimed in claim 81, wherein said dither cells of a rectangular region have a common minimum gray scale value.

83. A method as claimed in claim 82, further comprising the steps of:

producing a list of said rectangular regions ; and

transmitting said characteristic data of said rectangular regions of said list.

84. A method as claimed in claim 83, wherein said transmitting step transmits said characteristic data in compressed form without transmitting and compressing raster image data of said rectangular regions.

85. A computer program product, comprising:

a computer-readable medium on which is stored a computer program having commands in encoded form, said computer program causing a computer to implement the following steps:

generating a data stream of image raster data from language elements of a graphics language, said data stream containing gray image areas in a form of dither cells whose gray scale values correspond to model dither cells;

dividing said image raster data of each one of said pages into tiles of a two-dimensional grid network, each of said tiles include a plurality of said image raster data;

identifying appertaining ones of model dither cells and said gray scale values for each of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles; and

transmitting characteristic data of said marked tiles for further processing of said image raster data without transmitting raster image data of said marked tiles, said characteristic data containing information about a position of a respective one of said tiles and a respective one of said gray scale values.

86. A computer program product, comprising:

a computer-readable medium on which is stored a computer program having commands in encoded form, said computer program causing a computer to implement the following steps:

generating a data stream of image raster data page-by-page from language elements of a graphics language, said data stream containing gray picture elements in a form of dither cells whose gray scale values are defined by model dither cells;

determining at least one area that contains only dither cells;
identifying an appertaining model dither cell and a gray scale value of said at least one area and marking said at least one area; and
transmitting characteristic data of the marked area for further processing of the image raster data without transmitting raster image data of the marked tiles have a predetermined gray scale value, said characteristic data contain information about a position of the respective tile and the respective gray scale value.

87. A computer program element stored on a computer readable media and executable on a computer, comprising:
commands in encoded form that cause a computer to implement the following steps:
generating a data stream of image raster data from language elements of a graphics language, said data stream containing gray image areas in a form of dither cells whose gray scale values are determined by model dither cells;
dividing said image raster data of each one of said pages into tiles of a two-dimensional grid network, each of said tiles include a plurality of said image raster data;
identifying appertaining ones of model dither cells and said gray scale values for each of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles; and
transmitting characteristic data of said marked tiles for further processing of said image raster data without transmitting raster image data of marked cells having characteristic data corresponding to a predetermined model dither cell, said characteristic data containing information about a position of a respective one of said tiles and a respective one of said gray scale values.

88. A computer program element as claimed in claim 87, wherein said computer program element is present on a computer-readable medium.

89. A computer program element stored on a computer readable media and executable on a computer, comprising:
commands in encoded form that cause a computer to implement the following steps:
generating a data stream of image raster data page-by-page from language elements of a graphics language, said data stream containing gray picture elements in a form of dither cells whose gray scale values are defined by model dither cells;
determining at least one area that contains only dither cells;
identifying an appertaining model dither cell and a gray scale value of said at least one area and marking said at least one area; and
transmitting characteristic data of the marked area for further processing of the image raster data, said characteristic data contain information about a position of the respective tile

and the respective gray scale value.

90. A computer program element as claimed in claim 89, wherein said computer program element is present on a computer-readable medium.

91. A computer-readable medium that contains a computer program, comprising:
the computer program on the computer-readable medium which causes a computer to implement the following steps:
generating a data stream of image raster data from language elements of a graphics language, said data stream containing gray image areas in a form of dither cells whose gray scale values are determined by model dither cells;
dividing said image raster data of each page into tiles of a two-dimensional grid network, each of said tiles include a plurality of said image raster data;
identifying appertaining ones of model dither cells and said gray scale values for each of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles; and
transmitting characteristic data of said marked tiles for further processing of said image raster data, said characteristic data containing information about a position of a respective one of said tiles and a respective one of said gray scale values.

92. A computer-readable medium that contains a computer program, comprising:
the computer program on the computer-readable medium which causes a computer to implement the following steps:
generating a data stream of image raster data page-by-page from language elements of a graphics language, said data stream containing gray picture elements in a form of dither cells whose gray scale values are defined by model dither cells;
determining at least one area that contains only dither cells;
identifying an appertaining model dither cell and a gray scale value of said at least one area and marking said at least one area; and
transmitting characteristic data of the marked area for further processing of the image raster data, said characteristic data contain information about a position of the respective tile and the respective gray scale value.

(ix). EVIDENCE APPENDIX

none

(x) RELATED PROCEEDINGS APPENDIX

none

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